

CLAIMS

1. A system for transmitting program guide information in a television distribution system comprising:

a) a network headend, said headend including

1) a script generator for generating a plurality of pages of programming information from said program guide information, at least some of which include programming description information for a group of television channels during a selected time interval; and

2) a multiplexer for generating a multiplexed datastream in which said pages are interleaved with one another, and repeated in a carousel manner;

b) a distribution network for broadcasting said multiplexed datastream; and

c) at least one downstream channel interfaced to said distribution network for broadcasting said pages of programming information to one or more terminal devices.

2. The system of claim 1, further including a plurality of terminal devices interfaced to said at least one downstream channel for receiving said pages of programming information, each said terminal device including:

1) a receiver for receiving said pages of programming information; and

2) a terminal processor for managing display of said pages of programming information, said terminal processor including a terminal processor application for selectively accessing one or more of said pages in response to inputs from a system viewer, and formatting said pages into one or more corresponding video images for display on a video monitor.

3. The system of claim 2, wherein said headend further includes a background screen generator for generating a digital background screen image to be broadcast by said distribution network on said at least one downstream channel, and said terminal processor application further includes a display manager for generating a video display image in which selected ones of said pages of programming information are overlaid on said background screen image.

4. The system of claim 2, wherein said terminal device further includes a memory for storing said pages of programming information.

5. The system of claim 4, wherein said terminal processor application further includes programming for pre-caching selected ones of said pages of programming information in said memory before a request for display of said selected pages of programming information is received from a viewer, said selected ones of said pages being referenced by or related to a currently displayed one of said pages.

6. The system of claim 4, wherein a background screen image, on which said pages of programming information are to be overlaid when formatted into a video image, is stored in said memory, and accessed by said terminal processor application.

7. The system of claim 4, wherein each of said pages of programming information is broadcast on a virtual digital channel contained within said downstream channel, and said terminal device further includes a channel mapping database in said memory that identifies a virtual digital channel to which each of said pages of programming information is assigned to facilitate display of said pages of programming information by said terminal processor.

8. The system of claim 4, wherein said terminal processor includes programming for highlighting selected text in one of said pages, accessing information related to said selected text in response to an input from a viewer, and displaying said related information in a selected area on one of said video images.

9. The system of claim 8, wherein said selected text comprises television channel identification information and a program title, and said related information comprises a description of the programming content for said program title.

10. The system of claim 7, further including an input device for entering program guide requests into said terminal device.

11. The system of claim 10, wherein said input device includes a plurality of selection keys for selectively highlighting selected text displayed in said video image, and accessing additional ones of said pages of programming information.

12. The system of claim 10, wherein said input device includes a selection key for
5 accessing a page of program guide information that corresponds to a next future time period for a group of channels whose program information for a selected time period is presently being displayed.

13. The system of claim 10, wherein said input device includes a selection key for
10 accessing a page of program guide information that corresponds to a group of channels that is next in sequence to a group of channels whose program information for a selected time period is presently being displayed.

14. The system of claim 13, wherein said next group of channel information is
15 selected by highlighting a highest numbered channel on a presently displayed page of program information, and pressing a selection key on said input device.

15. The system of claim 10, wherein said pages include category based groups of pages that include program information that is organized by a plurality of content related categories, and said category based pages are accessible by highlighting and selecting a category field on a displayed one of said pages.

20 16. The system of claim 10, wherein said input device further includes a selection key for accessing a channel on which a program that is currently highlighted on a displayed page of program information is broadcast.

25 17. The system of claim 1, further including a second digital multiplexer for receiving said multiplexed datastream from said first multiplexer, and multiplexing said datastream with a source of digital television signals to form a second multiplexed datastream that is comprised of said program guide information and said digital television signals, and is broadcast by said distribution network on said at least one downstream channel.

18. The system of claim 1, wherein said network headend further includes a database for storing program guide information to be accessed and formatted into said pages by said script generator.

19. The system of claim 1, further including a remote server for storing program guide information, and delivering said program guide information to said script generator in said headend to be formatted into said pages of programming information.

20. The system of claim 19, wherein said remote server is accessible by said script generator through the Internet.

21. The system of claim 1, wherein said script generator is programmed to generate updated pages of programming information on a periodic basis.

22. The system of claim 21, wherein said script generator generates updated pages of programming information every half hour.

23. A method for transmitting program guide information in a television distribution system comprising the steps of:

- a) accessing programming guide information with a script generator in a network headend;
- b) generating a plurality of pages of programming information from said program guide information, at least some of which include programming description information for a group of television channels during a selected time interval;
- c) generating a multiplexed datastream from said pages in which said pages are interleaved with one another, and repeated in a carousel manner; and
- d) broadcasting said multiplexed datastream on at least one downstream channel interfaced to said network headend.

24. The method of claim 23, further comprising the steps of:

e) receiving said multiplexed datastream with at least one terminal device interfaced to said at least one downstream channel, said terminal device including a terminal processor; and

f) formatting said datastream with said terminal processor into a plurality of video images for display on a video monitor, at least some of said images including programming description information for multiple groups of television channels.

25. The method of claim 24, further comprising the steps of:

g) generating a digital background screen image with a background screen generator in said headend;

h) broadcasting said background screen image on said at least one downstream channel;

i) receiving said background screen image with said terminal device; and

j) generating a video display image with said terminal processor in which selected ones of said pages of programming information are overlaid on said background screen image.

26. The method of claim 25, further comprising the step of storing said background screen image in a memory in said terminal device.

27. The method of claim 24, further comprising the step of storing said pages of programming information in a memory in said terminal device as they are received.

28. The method of claim 27, wherein selected ones of said pages of programming information are pre-cached in said memory before a request for display of said selected pages of programming information is received from a viewer, said selected ones of said pages being referenced by or related to a currently displayed one of said pages.

29. The method of claim 27, wherein each of said pages of programming information is broadcast on a virtual digital channel contained within said downstream channel, and said terminal device further includes a channel mapping database in said memory that identifies a virtual digital channel to which each of said pages of programming information is assigned,

said method further comprising the step of accessing said channel mapping database with said terminal processor to locate a selected one of said pages of programming information in said multiplexed datastream.

30. The method of claim 24, wherein said terminal processor further carries out the steps of highlighting selected text in one of said pages in response to an input received from an input device, accessing information related to said selected text in response to an input received from a viewer, and displaying said related information in a selected area on one of said video images.

31. The method of claim 30, wherein said selected text comprises television channel identification information and a program title, and said related information comprises a description of the programming content for said program title.

32. The method of claim 24, further comprising the steps of entering one or more information requests into said terminal processor with an input device by actuating one or more keys on said input device, said information requests being selected from the group comprising a request for accessing a page of program guide information that corresponds to a next future time period for a group of channels whose program information for a selected time period is presently being displayed, a request for accessing a page of program guide information that corresponds to a group of channels that is next in sequence to a group of channels whose program information for a selected time period is presently being displayed, and a request for accessing a channel on which a program that is currently highlighted on a displayed page of program information is broadcast.

33. The method of claim 32, wherein said next group of channel information is selected by highlighting a highest numbered channel on a presently displayed page of program information, and pressing one of said keys on said input device.

34. The method of claim 23, wherein the step of accessing programming guide information with a script generator in a network headend further comprises accessing said information from a database in said headend.

35. The method of claim 23, wherein the step of accessing programming guide information with a script generator in a network headend further comprises accessing said information from a remote server.

36. The method of claim 35, wherein said remote server is accessed through the Internet.

37. The method of claim 23, further comprising the step of generating updated pages of programming information on a periodic basis.

38. The method of claim 37, further comprising the step of generating updated pages of programming information every half hour.

39. The method of claim 24, wherein said pages include category based groups of pages that include program information that is organized by a plurality of content related categories, and said category based pages are accessible by highlighting and selecting a category field on a displayed one of said pages.

40 A system for transmitting information comprising:

a) a network headend, said headend including a distribution network for transmitting a plurality of groups of text information;

b) at least one downstream channel interfaced to said distribution network for carrying said transmitted groups of text information;

c) a plurality of set top converter boxes for receiving said groups of text information, each said set top including:

1) a receiver for receiving said groups of text information; and

2) a terminal processor for managing display of said groups of text information, said terminal processor including a terminal processor application for selectively accessing and displaying one or more of said groups of text information in response to inputs from a system viewer;

d) a monitor interfaced to said set top for displaying said groups of text information; and

e) an input device for sending input commands to said terminal processor requesting display of one or more of said groups of text information.

41. The system of claim 40, wherein said headend further includes a first digital multiplexer for receiving said groups of text information and interleaving said groups into a plurality of carouselled, sequential data packets to form a multiplexed datastream that is broadcast by said distribution network on said at least one downstream channel .

42. The system of claim 41, further including a second digital multiplexer for receiving said multiplexed datastream from said first multiplexer, and multiplexing said datastream with a source of digital television signals to form a second multiplexed datastream that is comprised of said groups of text information and said digital television signals, and is broadcast by said distribution network on said at least one downstream channel.

43. The system of claim 40, wherein said headend further includes a background screen generator for generating a digital background screen image, and delivering said background screen image to said distribution network to be broadcast on said at least one downstream channel, and wherein, said terminal processor application further includes means for displaying said background screen image on said monitor, and overlaying selected ones of said groups of information on said background screen.

44. The system of claim 43 wherein said headend further includes an encoder for digitally encoding said background screen image before it is broadcast by said distribution network, and said set top further includes a decoder for decoding said background screen image after it is received by said receiver.

45. The system of claim 40, wherein said network headend further includes a server for accessing and formatting text information to be broadcast into said plurality of groups of text information.

46. The system of claim 45, wherein said headend further includes a database for storing said text information to be accessed and formatted by said server.

47. The system of claim 45, further including a remote server for storing said text information, and delivering said text information to said headend server to be formatted into said groups of text information.

48. The system of claim 47, wherein said remote server is accessible by said headend server through the Internet.

49. The system of claim 45, wherein said server formats said groups of information as HTML or HTML-like pages of information, each of said pages being formatted for display on said monitor.

50. The system of claim 40, further including at least one upstream channel, a distribution network in each said set top interfaced to said at least one upstream channel and a receiver in said network headend for communicating requests for said groups of text information from said set tops to said network headend.

51. The system of claim 40, wherein said set top further includes a memory for storing said groups of text information.

52. The system of claim 51, wherein said terminal processor application is further programmed for pre-caching selected ones of said groups of text information in said memory before a viewer enters a request for display of said selected groups of text information.

53. The system of claim 51, wherein a background screen image, on which said groups of text information are to be overlaid when displayed on said monitor, is stored in said memory, and accessed by said terminal processor application.

54. The system of claim 51, wherein each of said groups of information is transmitted on a virtual digital channel contained within said downstream channel, and said set top further includes a channel mapping database in said memory that identifies a virtual digital channel to which each of said groups of text information is assigned to facilitate display of said groups of text information by said terminal processor.

55. A method for transmitting information comprising the steps of:

- a) providing a plurality of groups of text information in a network headend;
- b) transmitting said plurality of groups of text information through at least one downstream channel to a receiver in at least one set top converter box for receiving said groups of text information, each said set top including:
- c) receiving a request to display at least a selected one of said groups of text information from an input device interfaced to said set top;
- d) accessing said selected one of said groups of information from said receiver; and
- e) displaying said selected one of said groups of information on a monitor interfaced to said set top.

56. The method of claim 55, wherein said step of providing a plurality of groups of text information in said network headend further comprises multiplexing said groups of text information into a plurality of carousel, sequential data packets to form a multiplexed datastream to be transmitted through said at least one downstream channel to said set top.

57. The method of claim 56, further including the step of multiplexing said multiplexed datastream with a source of digital television signals to form a second multiplexed datastream that is comprised of said groups of text information and said digital television signals, and is broadcast on said at least one downstream channel.

58. The method of claim 55, further including the steps of generating a digital background screen image in said network headend, and transmitting said background screen image to said set top for displaying said background screen image on said monitor, and overlaying selected ones of said groups of information on said background screen.

59. The method of claim 58, further including the steps of digitally encoding said background screen image before it is broadcast by said distribution network, and decoding said background screen image after it is received by said set top.

60. The method of claim 55, wherein the step of providing a plurality of groups of text information in a network headend further comprises accessing and formatting text information to be broadcast into said plurality of groups of text information with a server in said headend.

5 61. The method of claim 60, wherein the step of accessing further comprises accessing said text information from a database in said network headend.

62. The method of claim 60, wherein the step of accessing further comprises accessing said text information from a remote server.

10 63. The method of claim 62, wherein the step of accessing further comprises accessing said text information from a remote server through the Internet.

64. The system of claim 60, wherein said server formats said groups of information as HTML or HTML-like pages of information, each of said pages being formatted for display on said monitor.

15 65. The method of claim 55, further including the step of sending a request for said groups of text information from said set tops to said network headend via at least one upstream channel.

66. The method of claim 55, further including the step of pre-caching selected ones of said groups of text information in a memory in said set top before a viewer enters a request for display of said selected groups of text information.

20 67. The method of claim 55, wherein the step of accessing said selected one of said groups of information from said receiver further comprises accessing a channel mapping database in said set top that identifies a virtual digital channel to which each of said groups of text information is assigned, and determining a location in a broadcast datastream where said selected one of said groups of information is located.